Homosexuality In Men: Influence Of Brain Structure, Genetics And Birth Order

Karen Hooker designed a study where she performed various psychological tests on homosexuals in 1957. The results found that there was no correlation between brain function between homosexuals and heterosexuals, including mental illness and development. This study is what inspired the American Psychological Association to remove homosexuality from their manual of psychological disorders, in 1973. If Hooker hadn't done this study homosexuality may be deemed very differently in the modern and developed world as there would be many more negative stereotypes, more so than there still is, attached to different sexualities. Furthermore, it could be said that Hooker's study was the beginning of the modern outlook on homosexuality as this is where it started to be deemed more normal. There are many biological arguments as to what causes homosexuality such as brain structure, genetics and birth order but we know that it is not all genetics. I will also be discussing environmental factors but there seems to be more research into biological factors maybe because it is easier researched eg, genetics, prenatal hormones and brain structure.

The concordance rate of genetics for monozygotic (MZ) twins are supposedly 100% but can vary slightly due to mutations and other errors in DNA replication, but theoretically, they share all the same DNA. Michael Bailey and Richard Pillard carried out a study between monozygotic and dizygotic (DZ) twins and non-related adopted brothers. The study found that 52% of MZ twins both self-identified themselves as homosexuals, the DZ twins had a 22% rate of both being homosexual and only a rate of 5% for non-related adopted brothers. These results clearly show that genetics is a large part of homosexuality because of the higher rate in identical twins, but it also proves that heredity cannot explain everything as if it could, then the rate of homosexuality in monozygotic twins would be 100%.

A lot of research in the area of homosexuality has found a presence of the gene Xq28. We know this is passed down from the mother because males have the chromosomes; X and Y meaning that they get the Y chromosome from their father and therefore, must get the X chromosome from the mother. The Superior Heterozygote Theory helps to explain the genes and how they can or can't be passed through to the next generation. The phenotype of homosexuality can only be achieved when there the recessive gene is homozygotic. If a mother's genes are heterozygous and the homosexual allele is the one that is passed on then it will become the phenotype. This can only happen with mothers because of the X chromosome. The gene on the X-chromosome was first suggested by Dean Hamer as he said there was a 'remarkable concordance' between 5 genetic markers that were seen on the Xq28 section of the chromosome. But no one believed him until J. Michael Bailey repeated the twin study and examined the genetics of 409 pairs of brothers where he found the same link as Hamer. There are still many scientists that after all this research believe that the link is not significant and it is not possible to pull conclusions from these studies about the genetics of homosexuals. Still, even if the link between the gene and homosexuality is not direct we could still say that it is more likely for a man to be homosexual if they have the Xq28 gene. As well as genetics, there have also been studies to differences in brain structure, further showing that there is an actual visible difference between homosexual and heterosexual brains.

The two main studies of brain structure that have found significant difference are the studies performed by D.F. Swaab and Laura S. Allen. D.F. Swaab and Laura S. Allen both carried out separate experiments in 1920 to study the actual anatomical differences of brain structure between homosexuals and heterosexuals. But D.F. Swaab found that a part of the hypothalamus, that was linked to sexual drive, was actually double the size of that in a homosexual. “In the homosexual brains examined, a small portion of the hypothalamus, termed the suprachiasmatic nucleus (SCN), was found to be twice the size of its heterosexual counterpart.” This SCN is linked to sexual drive because sex hormone receptors are found there so it can be said that as well as sexuality there may be a difference in how people identify their sex. SCN neurons have been found to contain ERalpha, ERbeta and progesterone receptors, these sex hormones are what controls circadian rhythms, and so this could be what affects sex and sexuality. ‘These data seem to support previously reported functional and structural SCN differences in relation to sex and sexual orientation’. Laura S. Allen carried out a similar study and her findings were that there are also structural differences between the brains of heterosexuals and homosexuals. But she found that the anterior commissure (AC) was also larger in size in the homosexual, the anterior commissure is also found within the hypothalamus. The anterior commissure has also been linked to sexual behaviour, as well as the suprachiasmatic nucleus. A larger brain could mean more activity of some areas and so if the SCN and AC are larger this could mean there is more activity surrounding the sexual drive and so this may have something to do with sexuality. Also, the sizes of the suprachiasmatic nucleus and the anterior commissure is not something that can be changed by the environment so this shows that some people are born with the tendency to grow up as a homosexual and it is not affected by what they are exposed to later in life.

Other studies have compared the brains of homosexual men with heterosexual women, and homosexual women with heterosexual men finding structural differences. Homosexual men and heterosexual women, so both are attracted to men, have symmetrical brains with both hemispheres of the brain being very similar in size in both groups of people. However, homosexual women and heterosexual men, both attracted to women, have asymmetrical brains where the right hemisphere is larger than the left, this is is the same in both groups of people. So the group attracted to women have similar brain size and the group attracted to men have similar brain size in comparison to the other. So brain size depends on who the person is that you are attracted to rather than your sexuality because men and women attracted to men have the same brain size - it is not only men who have different brain sizes like how D.F. Swaab and Laura S. Allen suggested. Scientists in Sweden have also found that homosexual men and heterosexual women have a similar emotional response in the brain so it is not just sexuality that is affected. A neurobiologist, Ivanka Savic, has used these studies and various other tests to compare the brains and she has found that there are differences in the way homosexuals and heterosexuals can perform tasks due to these size differences. She found that spatial awareness was similar in straight men and lesbians but gay men and straight women were better at language-based tasks. This can show that the way someone interacts with the world does not just depend on a homosexual's brain structure but it is actually sexuality along with gender together that will affect how a person's brain organisation is and how that affects how they behave.

The last argument for factors of nature is the fraternal birth order effect and this is to do with how many boys a mother gives birth to before reaching one that identifies as homosexual - this is not applicable to how many girls a mother has. Ray Blanchard was the first person to come up with this theory that the probability of homosexuality increases with the number of older

brothers increasing. Blanchard explains that because only males have the Y chromosome it has something to do with this. Men carry a protein on their Y chromosome, called the H-Y antigen which the mother's body recognises this as a foreign object. So the body produces antibodies that would attack the fetus in the womb and destroy these H-Y antigens. Blanchard thinks that these antigens are what causes a male to be heterosexual so if they are destroyed the fetus will be homosexual. As the mother has more boys the body can recognise the antigen quicker and the secondary, or so on, production of antibodies come in quicker and in higher volumes. 'Studies have found that a man without older brothers has about a 2 percent chance of being gay, but one with four older brothers has a 6 percent chance.' This is still relevant to homosexuals who are not raised with their biological older brothers showing that it is not to do with them feeling the same to their sex-typical brothers, and the homosexual identity was created in the womb and therefore, the child was born gay.